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Research Reports.

Report of the Medical Research Council for the Year 1928-29.

As evidence of a large volume of scientific work well done, it would be almost impossible to equal that which is presented in the 1928-29 Report of the Medical Research Council. An idea of the comprehensive character of the Council's undertakings will be gathered from the fact that for investigation in special subjects 27 Investigation Committees exist; no fewer than 711 scientists and others have assisted in and contributed to investigations; 259 scientific subjects have been dealt with and 142 Institutions, Government Departments and other bodies have been utilised or have lent their aid in the various research projects under consideration by the Council. The report is all the more interesting and informative inasmuch as it not only reviews the recorded events of the past year, but looks back on the experience of a third quinquennium of existence of the Council. To chronicle the mass of valuable information in such condensed form and clear style is in itself by no means a light undertaking, but the scientific results achieved, and issued by means of the report to the scientific world, reflect the highest credit on the Council, its able Secretary, and on all collaborators and workers engaged in this great national service, a service which is intended to embrace not only study and investigation of problems incidental to medical science but those sciences allied thereto. In the short space of a review it is not possible to remark on all subjects dealt with; the full report is recommended for purchase, price 3s. net, obtainable from His Majesty's Stationery Office.

FINANCIAL RESOURCES OF THE MEDICAL RESEARCH COUNCIL.—During the year a grant-in-aid of £148,000 was provided by Parliament. Of this, the sum of £10,000 was allocated for administration, including expenses of the Council and travelling; £52,000 for the National Institute for Medical Research at Hampstead and for the Farm Laboratories at Mill Hill; £86,000 for research grants to scientific workers at various centres, statistical enquiries, and investigations of the Industrial Health Research Board. Important additions from private benefactors and from public bodies interested in research, supplemented available resources to the amount of £20,000, so that the Council had a total of £168,000 for expenditure during the year.

The Report is divided into the following sections:—(I) Introduction; (II) The National Institute for Medical Research; (III) The Determination of Biological Standards and the Methods of Biological Assay and Measurement; (IV) Experimental Medicine and the Research Work of Clinical Units; (V) Research Schemes in Specific Subjects; (VI) Industrial Health; (VII) Travelling Fellowships; (VIII) Conclusion.

I.—INTRODUCTION.

(*a*) This section opens with a tribute to Lord Balfour, who served as Chairman of the Council for the past five years, retiring from membership in consequence of failing health. Lord D'Abernon, who served as Chairman of the Industrial Fatigue Research Board (now the Industrial Health Research Board) was appointed Chairman of the Council as from October 1st. (*b*) The History of the National Institute for Medical Research is recapitulated from its purchase with its freehold site in 1914 from non-expended income in the first year of work, the loan of the premises for hospital purposes during the war, the acquiring of a freehold site of nearly forty acres for the Farm Laboratories at Mill Hill from savings during the war, the addition of permanent buildings at the latter place through the aid of a bequest from the late Miss O. H. Stubber, and lastly the completion of the extension of the Institute at Hampstead through a bequest of the late Lord Justice Ronan. (*c*) The National Institute is not only the centre of fundamental research in various branches of medical science, but it is made the medium of maintaining and distributing the national standards for biological measurement of medical substances, and for which highly-qualified investigators are employed. The evaluation of national standards in relation to the corresponding international standards requires the greatest possible accuracy, especially in a class of remedies potentially dangerous either in point of dosage or from dangerous contaminations. The Council undertook the responsibility, under the Therapeutic Substances Bill of 1925 and Regulations of 1927, of preparing and preserving these standards at the National Institute, and furthermore to continue investigations with a view to possible future applications of the Act to additional substances. As biological knowledge advances it is certain that this branch of work will be greatly extended. (*d*) No part of the work directly promoted by the Council is of more practical and vital importance than the studies and enquiries into the various diseases of animals and man caused by the so-called "viruses" or "filter passing" ultra-microscopic organisms. No one has yet succeeded in preparing an artificial medium which will provide conditions in which these viruses will reproduce themselves and multiply, but it seems characteristic of a virus that it will only multiply in the presence of living cells which it infects. In the elucidation of these puzzling diseases only by the exercise of the highest technical skill by workers of exceptional ability will much progress be shown. So far as immunology in respect to animal diseases is concerned, "a successful method of making dogs resistant to distemper has been worked out at the Farm Laboratories, Mill Hill, by Dr. Laidlaw and Major Dunkin, in which a virus made harmless by formalin is used for a protective injection. At the National Institute, Dr. Todd has also lately shown that two or three inoculations of the virus of fowl plague, which has been treated with

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carbolic acid and glycerine until it is no longer capable of giving the disease to a fowl, makes the bird so resistant to the disease that the subsequent injection of 300,000 times an otherwise fatal dose of infective virus leaves them unharmed. . . Brilliant practical results have indeed been obtained by this work in the prevention of dog distemper, as is now well known. . . It will be asked, if these successes can be gained, why are not all virus diseases under similar control? The public ask this as regards foot-and-mouth disease. . . . They ask it in the medical field as regards the killing disease measles, and the plagues of influenza and of 'common colds.' . . . If influenza, as many believe, is a virus disease, progress is barred at present since it appears not to be transmissible at all to animals, and this, in view of the complete impracticability of extensive human experiments, forbids the experimental method that is essential to any measurable advance." A line of enquiry pursued has been to examine the reactions between the virus as such and the "antibodies" that appear in the blood to counteract it and by means of which immunity is established. Another interesting line of enquiry has been the determining of the distribution of the virus in the blood, a matter which is by no means easy. Following on pre-war knowledge that the virus of typhus fever and rinderpest respectively was wholly contained in the white blood corpuscles, the same relationship has been ascertained in respect to fowl plague by Dr. Todd, to canine distemper by Dr. Laidlaw and Major Dunkin, and to vaccinia by Dr. Wilson Smith. On the other hand, it has been found at the Lister Institute that in foot-and-mouth disease the virus is almost wholly and at all periods of the disease found free in the blood fluid, and this has been confirmed by Mr. Galloway during the past year at the National Institute. Evidence, however, seems to point to the conclusion that in general the invading virus multiplies within the cells of the living animal or plant rather than in the body fluids. (*e*) Under the heading of "Studies in Comparative Pathology," in addition to the work upon the virus of canine distemper by Dr. Laidlaw and Major Dunkin, allusion is made to the investigation of tests for tuberculosis in dairy cattle and the new diagnostic test by Major Dunkin for Johne's disease in cattle. "The work upon tuberculosis and Johne's disease in cattle has immediate medical importance in the direct relation that both lines of enquiry have to the purity and abundance of the milk supply to the nation. These considerations would seem to offer justification enough for these incursions by the Council into the field of animal pathology. The Council think, moreover, that promotion of work of this kind at Mill Hill will allow the full future development of active and intimate co-operation between their own workers and those who may hereafter be engaged in advancing the knowledge of animal disease for the good of agriculture and of veterinary medicine, to the advantage of both. . . Medicine has always gained by the study of animal disease, and yet it should not fall unduly to medical interests to study animal disease for the benefit of the animals themselves. The medical and veterinary interests should be developed side by side, together in an active partnership, each giving and receiving benefits springing from cordial co-operation." This co-operation is significantly illustrated by allusion to Dr. Stanley Griffith's whole-time service in the Council at the Field Laboratories, Cambridge, to his joint work with Professor Buxton, of the Department of Comparative Pathology, Cambridge University, in methods for immunizing calves against tuberculosis, and work to be carried out at the newly-erected Dunn Nutritional Laboratory, Cambridge, between workers in this Laboratory and Professor Buxton's Department on the part played by nutrition in relation to resistance of the body against infective disease, animal and human. (*f*) In the introductory remarks relating to Clinical Research and Experimental Medicine it is made clear that the larger part of the annual income is expended in grants to approved workers in almost all the Universities and at other centres of research throughout the country, and that, on the whole, a very small part of it has been done by men engaged in clinical work and studying disease as it actually presents itself in human beings. Starting, therefore, in 1916, with the first effective hospital "unit" at University College Hospital, under Sir Thomas Lewis, for the scientific study of the heart and blood vascular system, its disorders and their treatment, financial provision was made in 1919 by Government for setting up University clinics on the "unit" system at certain selected hospitals in London, where paid professors of the clinical subjects could devote their time to teaching and research, the beds of the units to be kept filled so as to illustrate as completely as possible the whole normal range of medical work in all its clinical fields. Facilities, especially in laboratory arrangements, have been extended at several places by gifts from the Rockefeller Foundation of New York and from the Trustees of Sir William Dunn. (*g*) In 1928, through the Lord President, the Council recommended that a Government inquiry into the needs and possibilities of a national scheme for radium should be instituted. This recommendation was referred to the Committee of the Civil Research and there have eventuated a National Radium Trust and a Radium Commission with funds provided by Parliament and by public subscription for the purchase of radium. All treatment is to be regarded as research work, directed not only to the relief of the immediate patients but to the improvement of methods for future use. (*h*) The Council, after consultation with the Admiralty, the War Office, and the Air Ministry, have appointed Committees to initiate and supervise research work into the physiology of vision and of hearing.

II.—The National Institute for Medical Research.

Dr. H. Dale now serves the Council as Director-in-Chief of the Institute. As mentioned previously, the extension under the Lord Justice Ronan bequest has been completed. It provides the highest possible standard of hygienic conditions for the keeping of experimental animals: the hutments in the grounds are being dismantled. Accommodation occupied by Professor Greenwood and his staff charged with research work under headings of Experimental Epidemiology and Industrial Health has been freed by the transfer of that staff to their new quarters in the London School of Hygiene and Tropical Medicine, Mr. Barnard's Optical Department returning from the Farm Laboratories, Mill Hill, to the main building.

Biochemistry and Pharmacology.—The main lines of inquiry pursued have related to chemical substances of relatively simple composition which have intense physiological activity, notably histamine and acetylcholine

extracted from the spleens of large animals, such as the horse or the ox, and which are reputed to be concerned in delicate adjustments of the blood circulation to particular local physiological needs within the body. The chemistry of Vitamin D and its relation to ergosterol and the prevention of rickets has been continued. It is interesting to note that the presence of Vitamin D in the brain of an Egyptian mummy has been reported.

Experimental Pathology, Bacteriology and Protistology.—A general review of studies of various filter-passing viruses has already been given, so that it is only necessary to record briefly other work conducted. Mr. Galloway has investigated a paralytic condition of fowls recently occurring in England for the first time, though it has been observed in Germany, America and Holland. He has also collaborated with Dr. Nicolau in studies of neurotropic viruses and more particularly those of Borna disease of sheep and cattle. Much time and energy have been spent in testing a supposed value of lead selenide as a curative drug in cancer, but results obtained have been negative on mice and fowls. Owing to similarity of the nervous lesions, the mode of onset and clinical course of encephalomyelitis associated with canine distemper to certain diseases of the central nervous system in man, this condition has been the subject of inquiry by Dr. Perdrau, the material being supplied by Major L. P. Pugh, who has collaborated with him in research and observations. Records of the use of the diagnostic agent " Johnin " have been received from 95 veterinary surgeons and reports in most instances continue to be satisfactory. Supplies of Johnin have been sent to veterinary surgeons in Jersey, Guernsey, South Africa, New Zealand, Holland, France and Illinois, U.S.A.

Applied Optics—to which may be added ultra filtration. Work in this department has been directed towards problems associated with the study of filter-passing viruses and ultra-violet microscopy, by Mr. Barnard and Mr. Elford, and the evidence suggests the likelihood of a successful application.

Applied Physiology and Hygiene.—The work by Dr. Leonard Hill and his collaborators concerned chiefly oxygen tension in normal tissues in relation to resistance of disease occasioned by anærobic organisms and the effect of radiation on resistance to infection and to antirachitic activity.

III.—The Determination of Biological Standards.

In addition to the serological standards maintained and issued regularly under the Therapeutic Substances Act, *e.g.*, diphtheria antitoxin, tetanus antitoxin, anti-dysentery serum and " old " tuberculin, the examination of other therapeutic sera has been continued, and in the revision of the British Pharmacopœia, on which the new Pharmacopœia Commission is now engaged, the necessary stable standards for reference are ready for adoption. British standard preparations have been extended to Jugo-slavia, Czechoslovakia, Austria, India, Australia and South Africa.

Of the National Collection of Type Cultures, accommodated at the Lister Institute of Preventive Medicine, over five thousand cultures were distributed to workers at home and abroad, and over three hundred new strains were added to the Collection. In the production of standard cultures and sera special mention is made of the experimental enquiry into the complex serology of the Salmonella group of diseases, and of observations of the growth and multiplication of *B. tuberculosis*, by which it has been established that the life cycle of the baccillus is of classic simplicity and that no evidence of any reproductive process other than by simple fission could be detected.

IV.—Experimental Medicine and Research Work of Clinical Units.

As previously stated, this part of the Council's undertaking has been arranged in various hospitals and medical schools through medical or surgical " units " and physiologically certain cause and effect conditions have been defined. For instance, at University Cottage Hospital, London, in hæmoglobinuria induced from exposure to cold, appropriate tests clearly showed the condition to be due to the presence of a hæmolysin in the patient's blood. Similarly in urticaria and in the reaction of the skin to cold or in a vascular response to injury, a dermolysin in the blood locally was demonstrated, a substance having a histamine-like action being liberated from the cells of the skin and acting on vessels and nerves. In St. Thomas's Hospital, London, a special clinic has studied the physiology of digestion and the regulatory mechanism of gastric acidity. Results have shown that pepsin concentration of the gastric contents increases progressively after a meal, reaching a maximum when secretion of the juices comes to an end. In St. Bartholomew's Hospital, London, the influence of parathyroid extract, thyroid extract and calcium salts in tetany succeeding operations on the thyroid gland was studied, and satisfactory therapeutic results obtained.

In Guy's Hospital, London, observations related to rheumatoid arthritis, the various aspects of pernicious anæmia, and through the Asthma Research Council to the biochemical changes of asthma. At the Royal Infirmary, Sheffield, Professor Mellanby and collaborators have been investigating the relationship of diet to infection and it has been found that a definite increase of resistance to puerperal septicæmia is given by intensive vitamin A therapy. Further observations are contemplated in infections such as pneumonia, tuberculosis and rheumatic fever. " If it is possible to prove that resistance to bacterial invasion can be controlled by specific dietic means, a great step in preventive and curative medicine will obviously have been made." In the surgical clinic of the Royal Infirmary, Edinburgh, total mortality from burns has been greatly lowered by tannic acid treatment, pain being almost abolished and general toxæmia diminished.

V.—Research Schemes in Specific Subjects.

The Council again received a grant from the Empire Marketing Board for the investigation of the vitamin content of various Empire food substances, and work is being done at the Lister Institute. A study of factors causing destruction of the fat-soluble vitamins in milk has also begun at the National Institute for Research in Dairying, Reading. It is interesting to remark that at the new Nutritional Laboratory, Cambridge, it has been determined that the pigment carotene has intense vitamin A activity when given in minute doses under defined dietary conditions. " In the course of the experiments it has been found that the carrot is a much richer source of vitamin A activity than was hitherto supposed. On a basis of dry weight the carrot root must approach cod liver oil

activity; and on account of its ready accessability and cheapness this fact may have economic importance . . . ."

"At Cambridge, Dr. Stanley Griffith, in the whole-time service of the Council, has continued his studies with Professor J. B. Buxton of the immunizing value of the 'B.C.G.' vaccine of Calmette and Guèrin in cattle. These have been greatly aided by a grant from the Empire Marketing Board for the cost of increased accommodation for cattle. The experiments have shown that a high degree of resistance to tuberculosis can be conferred upon a calf by either inoculation or oral administration of B.C.G. In some calves the immunity produced appears to be complete." Dr. Stanley Griffith has also definitely concluded that phthisis in the human being may be caused by the bovine tubercle bacillus, and for some unexplained reason this form of phthisis is commoner in Scotland than in England. It is interesting further to note that the Council has given its support to an inquiry into the incidence of tuberculosis in herds in Scotland, with special reference to the hygiene of the milk supply and to the possibility of complete eradication of the disease from herds in a selected limited area. The area selected is in Ayrshire and the actual fieldwork will be done under the direct supervision of the Hannah Dairy Research Institute by Mr. Jordon, M.R.C.V.S., assisted by a local veterinary surgeon, the co-operation of stock owners and veterinary surgeons in the district also having been obtained. Very important work, too, has been done with regard to the standardisation of tuberculin, and the Tuberculin Committee operating under the Council are so well satisfied with the accuracy and simplicity of the intradermal test that they have recommended that its use should be made compulsory where testing is required under the Milk (Special Designations) Orders. Prominence is given in the report to the canine distemper investigations by Dr. P. P. Laidlaw and Major G. W. Dunkin at the Farm Laboratories, Mill Hill, and to the method devised by them for the protective immunisation of dogs by means of a vaccine of the killed or inactivated virus of the disease, followed a week or two later by the administration of a dose of fresh living virus. As a result of the double process of inoculation a solid and lasting immunity is produced. Over two thousand doses of the vaccine and virus have been issued from the Laboratories and in less than one per cent. was some ill-effect reported, and in only two instances have dogs, apparently immunized with success, been proved to succumb to distemper. The prophylactic is now prepared and issued commercially to veterinary surgeons by Messrs. Burroughs Wellcome and Co. and so far the results correspond closely with those obtained by the investigators themselves. Where fatal or severe reactions have occurred it has been ascertained that such unfavourable results bore relation to the condition of the dogs themselves at the time of inoculation. Either they were known to be febrile or examination disclosed some other condition other than distemper present.

"It cannot, therefore, be too strongly stressed that the animals should be in perfect health before immunization is attempted." The investigators, having been freed from the commercial production of the prophylactic, have turned their attention to possible improvements in method or an alternative method of inoculation. They have taken up the production of immune and hyperimmune sera, their work being directed not only towards curative measures in the incubatory or early stages of the disease, but of trying out a simultaneous system of inoculation with hyperimmune serum and living virus as an alternative to the present procedure, and which carries a suggestion of more suitability in some instances.

It is also interesting to note that the Colonial Medical Research Committee, through H. E. Hornby, F.R.C.V.S., Veterinary Pathologist, Mpwapwa, Tanganyika Territory, are testing certain styryl compounds for their trypanocidal efficacy in cattle in that country.

VI.—Industrial Research deals with miscellaneous industrial diseases and the activities of the Industrial Health Research Board.

VII.—Travelling Fellowships.—Under an arrangement with the Rockefeller Foundation of New York, a number of Fellowships are awarded annually by the Council. The Council has also received, from Mrs. Odo Cross, the sum of £40,000 as the endowment of a Trust for the establishment of Research Fellowships for the promotion of preventive and curative treatment of tuberculosis in any of its forms.

VIII.—Conclusion.—This short chapter recounts the financial aid received from public and private sources in supplement of the Parliamentary grant-in-aid. Support has been received from the Dental Board of the United Kingdom, the Miners' Welfare Fund, the Empire Marketing Board, the British Empire Cancer Campaign and the Distemper Research Council of *The Field* newspaper. A fifth and final annual instalment of £2,000 has been received from the Trustees of the late Sir William Dunn, and the same Trustees have given £6,000 for the erection of a Nutritional Laboratory at Cambridge. Mention has already been made of the valuable extension of the Institute at Hampstead, made possible by bequest from the late Lord Justice Ronan, and the generous benefaction of Mrs. Odo Cross of £40,000, previously mentioned, for the study of tuberculosis, is a great help in a good cause.

J. M.

Report of the Distemper Research Committee—March, 1930.

The report discusses the information now available as to experience with the commercial preparation of the distemper prophylactic now in general use in this country.

The Committee is satisfied that Laidlaw and Dunkin have demonstrated beyond doubt that their method of preventive inoculation is capable of making dogs resistant to infection by distemper. They have demonstrated this under laboratory conditions, and also by the inoculation of 2,000 privately-owned dogs and hounds, with an almost negligible margin of exceptions to the general success, and the method is undoubtedly practicable, although difficult.

Before commercial issue was undertaken, the Wellcome Laboratories prepared and issued *gratis* to veterinary surgeons 2,000 doses of the prophylactic, and the reports indicate that the results were comparable with those obtained by Laidlaw and Dunkin. Practically the only difficulties, therefore, are those inherent in the organisation of production on a large scale. The difficulties connected with the

manufacture of the vaccine, the distribution of the virus, and the standardisation of both products, are considerably increased when large scale production is undertaken, and also by the need of meeting the urgent but fluctuating demand of commercial use.

All veterinary practitioners supplied with the prophylactic have been asked to report the results, and as far as possible unsatisfactory results have been specially investigated. Reports, accounting for about two-thirds of the 22,000 doses issued, indicate that the results have been unsatisfactory only in a small proportion of cases.

These unsatisfactory cases, however, although constituting only a small proportion, have tended to occur in batches, and so in some quarters to appear to possess an importance they do not really deserve.

The reports concerning unfavourable results deal with two types of cases, those showing excessive reaction to the inoculation with virus, and those in which distemper has been contracted some time after an apparently successful vaccination.

Some of the cases of excessive reaction are known to be due to the inoculation of animals unfit for treatment. The prophylactic could not be expected to induce its normally mild or inappreciable reaction in dogs already suffering from naturally acquired distemper, perhaps in the incubative stage, nor in dogs suffering from other diseases or harbouring some latent infection. The importance of limiting the inoculation to healthy dogs, not suffering from or exposed to any infection, has always been emphasised, and the materials cannot be blamed for any untoward results incurred through failure to observe this condition.

In a small proportion of cases, however, illness, even amounting to an attack of distemper, has directly followed the inoculation of virus. Such excessive reactions might follow the use of a virus of excessive potency, but the Committee has found no evidence to support that suggestion, and no particular issue of virus has accounted for an undue proportion of severe reactions.

Excessive reactions to the virus might also result from the previous use of a vaccine of inadequate potency. The Committee suggests that some issues of vaccine may possibly have been below standard, although there is no definite evidence to support that contention, and, indeed, it is clear that every batch of vaccine was tested in accordance with the methods prescribed by Laidlaw and Dunkin. The manufacturers, with the concurrence of the Committee, propose in future to employ even more stringent tests. In certain cases severe reactions, and even an attack of distemper, followed the inoculation of virus before the expiration of the prescribed interval after vaccination, but this clearly could not be charged against the method.

In the other series of cases, the use of the prophylactic appeared to have conferred no effective resistance to natural infection. In some instances the failure may have been only apparent, the vaccinated dogs subsequently contracting other diseases clinically resembling distemper, but in a proportion of these cases the distemper virus was actually recovered from the patients, and there was no doubt that their resistance to the disease had proved inadequate.

These failures to immunise were undoubtedly due to the fact that in a minority of instances the virus was inactive by the time it reached the practitioner, and additional tests to avoid this defect will no doubt be introduced.

It has naturally been found that a few dogs may contract or develop other (and independent) diseases during the period of immunisation, and occasionally there have been complaints of abscess formation at the site of inoculation; some individual animals appear to be exceptionally liable to develop these local abscesses, in spite of all precautions to avoid bacterial contamination.

In general, the results have been highly satisfactory, and the difficulties in the way of the large scale and commercial production of the prophylactic have been surmounted. The Committee have every confidence in the ability of the technical staff of the Wellcome Laboratories to overcome the relatively small difficulties shown still to exist, but they suggest that Messrs. Laidlaw and Dunkin might again co-operate with them for a time in the testing of the vaccine and virus.

W. H. A.

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Medical and Veterinary Research.

When the Section of Comparative Medicine of the Royal Society of Medicine was inaugurated in the year 1923, the late Sir Clifford Allbutt, its first president, in his opening address, remarked that there was only one Science of Medicine and that in the study of disease, and of factors governing diseased conditions, human, animal and plant pathology constituted common ground. He implied that the best results in investigations were to be achieved by team work, by mutual help, and by an all-in system of procedure. There can be no question that this line of thought, and this rule of procedure, is the correct one in solving the many problems that surround disease and measures which necessarily must be implemented for their elucidation, their scientific control and treatment. Expert opinion generally is varied in character, scientific application becomes specialised, and the true value of research, presenting many aspects, phases and directions, lies in a combination of effort, and the co-operation of workers concerned. From its first conception this has been fully realised by the Medical Research Council and has been studiously followed. The useful and the practical issues of medical and allied sciences have been sought for and encouraged, and end results have more than justified the support which Government has been pleased to bestow on it. There are benefits to human and animal creation through medical, veterinary, and scientific research generally,

which can hardly be written down in pounds, shillings and pence. There is, moreover, no finality to research. Apart from new elements of disease that spring up, or new remedies which require to be tried out, there are still many of our old familiar diseases, both human and animal, whose causes yet remain obscure and invite investigation, for without a perfect knowledge of cause, remedial measures must also remain unscientific in application and follow empiricism. For this reason the Country, and indeed we may say the Empire, must feel grateful to the Medical Research Council, an institution appointed and financed in the main by the State for the exploration of all avenues whereby disease may be kept in subjection and the health of the nation and of animals preserved.

We publish in this issue a short review of the Council's report for the year 1928-29, and have made allusion more particularly to that part of it which has a more or less direct bearing on veterinary service. As a profession and as scientists we feel a sense of pride in being able to add our quota to investigation and elucidation of the cause of disease and the means whereby such may be controlled. Research into disease has no limitations nor frontiers, and whether veterinary science maintains its own purely veterinary research laboratories, or conducts its own clinical researches into animal disease in veterinary institutional " units," there must always remain that necessity and that advantage which is derived from co-operation and association with other scientific bodies and institutions which will make for more perfect understanding in method and reap results which are creditable to veterinary science and essential to its progress. It is difficult to imagine a more useful State organisation for the progress of the science of medicine—using the term in its widest sense—than the Medical Research Council, and its record over three quinquennial periods clearly proves this.

Not the least important of its activities is the clinical research conducted by " clinical units " in various large hospitals, for clinical experience and inquiry when recorded is always particularly helpful to the general practitioner, who looks to the scientist for guidance in improved method and rational up-to-date lines of treatment. The Council have certainly been fortunate in acquiring property at Hampstead which has greatly appreciated in value since its purchase in 1914; money, too, was saved during the war and a bequest from the late Lord Justice Ronan has added to the main building perhaps the most complete location for animals to be found in any country. But apart from this, a most efficient staff is engaged at the National Institute for Medical Research both at Hampstead and at Mill Hill, and all other scientists and workers in other places, whether in whole-time or part-time service of the Council, are of acknowledged ability as investigators. With such strength in scientific workers and such wealth of arrangements surrounding them, the outcrop of research effort cannot fail to be anything but of the highest order and of great benefit to the community and to the State alike.

Reviews.

The Register of Veterinary Surgeons, 1930.

Most members will have received by now a copy of the new Register. Those who have not are reminded that their copy will be sent to them on receipt of the Annual fee, which became due to the R.C.V.S. on April 1st. The Register shows no new features this year, beyond the fact that it has been corrected up to date. We regret to see that the names of no less than 28 members are included in a list (p. 286) of those whose addresses are unknown to the Registrar. These names are liable to removal from the Register unless a proper address is supplied. It is difficult to understand why members of a profession whose legal right to style themselves veterinary surgeons depends on the appearance of their names in the official Register, should be so careless about the matter.

The number of members registered is given as 3,448, which is 28 less than in 1929. The number of " Existing Practitioners " is now 46 as compared with 51 last year. There is thus a total diminution of 33 in the number of registered veterinary surgeons. The number of Fellows of the College is reduced from 248 to 240, but the number of holders of the D.V.S.M. has increased from 91 to 102.

[**Bacterial Metabolism.** By Marjory Stephenson. *Monographs of Biochemistry.* London: Longmans, Green & Co., Ltd. 18s.]

In nearly all fields bacteriologists are nowadays finding themselves up against biochemical problems and it seems that most advance is to be expected only by tackling investigations with both a sound knowledge of bacteriology and of biochemistry. It is only in this century that bacteriological chemistry has been studied at all in detail and consequently the amount of information available is by no means complete; nevertheless, sufficient advance has been made to warrant an authoritative and reliable review of the subject. Such a book has now been written and has recently been published and, although its title is "Bacterial Metabolism," this term has, perhaps, fortunately, been interpreted in a wide sense so as to include energy considerations and the problems of bacterial oxidations and growth.

After a short historical introduction, a chapter is devoted to energy considerations. This chapter is the least happy of the whole book, for it is based upon the work of Rubner, which work unfortunately suffers from unjustifiable assumptions. Thus experiments were carried out with bacteria grown for varying periods of time extending from eight days or more, the medium was then filtered (to remove bacteria) and the filtrate was assumed to contain solely foodstuffs not utilised for bacterial growth. But it is obvious that with bacteria incubated for so many days a certain amount of autolysis must have taken place, and this autolysed material would find its way into the filtered medium. Thus energy equations and deductions based upon such experiments are worthless and it would probably have been better to have restricted this chapter to a short account of energy considerations and their applications to bacteriology.

In chapter three we have a good summary of our knowledge of bacterial respiration, but it contains two or three mistakes or misprints that are liable to worry readers not conversant with the concepts of physical chemistry. Thus on page 40, in discussing the influence of chemical groupings upon the behaviour of substrate molecules in the presence of bacteria, the author has interchanged the examples of groupings possessing an electron more than the stable octets and the examples of those groups having an electron too few. Further, on page 46 the description beneath Fig. 2 is incorrect, the reduction being due to succinic acid (in variable quantities) and not to malonic acid. It is a pity that the paragraph on page 69 concerning glutathione is already out of date. It should have been possible to have rewritten this, since Professor Hopkins' reinvestigation, especially as this account originates from his laboratory. On page 79, line 5, "ærobes" should read "anærobes."

The chapter on growth brings much isolated work together and is fairly well done. It perhaps reflects the poverty of our knowledge of growth phenomena. The chapters dealing more specifically with the problems of bacterial metabolism, *viz.*, carbohydrate breakdown, carbohydrate synthesis, and protein breakdown, are excellent reviews of these subjects but might usefully have been extended to include the more rare types of fermentation in greater detail. Again, these chapters are marred by a few misprints. On page 141, line 6, the second "sulphite" should read aldehyde. In the equation on page 153 the formula for B. naphthylamine is incorrect, and again on page 200 there are mistakes in some of the formulæ given for the breakdown products of tyrosine. A further misprint is on page 190, where table 46 should read table 64.

The later chapters on nitrogen fixation and autotrophic bacteria are good, but again emphasise the gaps in our knowledge. The objection here to the doubtful purity of the strains of bacteria employed in the work described decreases the value of these chapters to the strict bacteriologist.

A useful list of references is given at the end of the book, from which the absence of most of the work of Kluyver and of Fildes is a grave omission.

But, taken as a whole, the book is well written and is a timely review of our knowledge of bacterial chemistry by an author who has herself done much towards its development and hence it bears the stamp of reliability and progress. It should prove a useful addition to the libraries of all workers on bacteriological problems.

W. R. W.

The Zoological Society.

101st Annual Report.

The one hundred and first annual report of the Zoological Society of London, issued to Fellows in anticipation of the general meeting on April 29th, contains an appendix describing the centenary celebrations held last year. The addresses of the President on the general history of the Society, and of the Secretary on the scientific history, and the speeches of congratulation delivered by the chief delegates of other societies are printed in full. A list of the delegates who attended the celebrations and accounts of the dinner, at which the Prince of Wales was the chief guest, of the garden party attended by over 8,000 Fellows and their friends, and of the dinner to the staff are given.

The body of the report, as usual, describes the progress of the Society. The total assets amounted to £171,571, an increase of nearly £30,000 on the preceding year, but the liabilities were increased by £44,673. The income was £7,000 and the expenditure £5,000 less than in 1928, which, both in receipts and payments, was the "peak" year of the Society.

The pathologist reports that there was a notable decrease in the incidence of tuberculosis in mammals and birds since the construction of the new Monkey House and the Bird House. Among the primates there were only two deaths from tubercle during the year, as compared with 41 in the last year of the old Ape and Monkey Houses. It is noted that, although special attention was given to cases of disease among parrots, there was no case of psittacosis during the year and no outbreak of epizootic disease in any of the avaries. On the other hand, an acute and rapidly fatal outbreak of enteritis, peculiar to Felidæ and known as "cat distemper," occurred during August and September. It appeared first in four young wild cats sent from Scotland, and, although it did not spread beyond the sanatorium building, it caused the death of several other newly arrived feline animals. No definite remedy is known for this disease, but under very careful nursing recovery sometimes takes place. A small hospital for the segregation and treatment of cases of this kind is being fitted up in a remote part of the Gardens.—*The Times.*

Clinical Report.

The Effect of Bovine Spinal Anæsthesia on Tonic Contraction of the Uterus in Dystokia.

By Oscar Stinson, M.R.C.V.S.

Cases of bovine dystokia may be arbitrarily divided into those in which the fœtus is mobile in the uterus and those in which the uterus is tonically contracted, rendering the fœtus immobile. In the following case the uterus relaxed and converted an immobile into a mobile and easily-manipulated case. It is not inferred that delivery could not have been effected by other means, but it is contended that severe handling would have had to be resorted to, whereas a minimum amount of manipulation in this ordinarily difficult case effected the delivery of a live calf under spinal anæsthesia.

Subject.—Three-year-old heifer, 9·5 cwt. Medium fat, first calf.

Position of Fœtus.—Lateral deviation of the head to the left. The patient had been straining for four hours and it was found that the uterus had firmly contracted upon the fœtus and that the base of the fœtal neck totally occluded the pelvic orifice, rendering repulsion impracticable. The feet were projecting from the vulva.

Procedure of injection in this case was similar to that described in the *Veterinary Record* of January 11th, 1930, by Geoffrey B. Brook, except that the needle was inserted at an angle of about 35° from the horizontal. A line drawn between the posterior borders of the lateral processes of the first coccygeal vertebra is a good guide to the site as it crosses the space between the first and second coccygeal vertebræ. These processes are easily located. Eighteen c.c. of " Parcaine " were injected into the space.

Symptoms after injection (recorded by an assistant).

3 minutes.—The respirations cease to be laboured and there is no straining.

7 minutes.—There are tremors in the flanks and rectus muscles. This symptom is constant throughout anæsthesia.

7·5 minutes.—Straddles uneasily with hind limbs. The tail is limp, white and devoid of sensation.

12 minutes.—The feet of the calf disappear from sight, which is indicative of uterine relaxation.

13 minutes.—Heifer eats a little hay.

14 minutes.—The hind limbs are placed well under the body.

16 minutes.—She nearly falls. The teats are still sensitive.

18 minutes.—She falls, but quickly regains the standing position with her feet crossed.

20 minutes.—The head of the fœtus can now be felt in the uterus and is easily made to assume the normal parturient position in the pelvic canal. The vagina is relaxed and flaccid.

25 minutes.—She assumes the " dog sitting " position.

26 minutes.—The patient is recumbent on the sternum with the hind limbs extended and not in the usual attitude.

27 minutes.—She attempts to rise, but is unable to raise the hind quarters.

31 minutes.—After slight traction the shoulders of the fœtus are drawn through the *os uteri*. There is no straining.

36 minutes.—The calf is delivered alive by mild traction. During delivery the heifer attempts to rise on the fore-quarters but is restrained. The teats are insensible to pain, white, wrinkled and could be milked. The vagina also lacks sensation. The vulva is œdematous and coarsely wrinkled. The prick of a pin is felt anterior to the second sacral vertebra.

75 minutes.—The hind limbs are drawn up to the body as though she intends to rise, but they gradually slip back to the extended position.

105 minutes.—The tail is regaining colour, the vulva is less wrinkled. There are some slight attempts to rise.

120 minutes.—The udder fills and the fine wrinkled appearance disappears, but the organ is insensitive to stimulation.

145 minutes.—She strains slightly and the fœtal membranes appear. She attempts to rise and is able to move the tail slightly.

185 minutes.—Eats a little hay and has a drink.

200 minutes.—Fœtal membranes are expelled.

210 minutes.—She stands normally with little effort.

Recovery was uneventful.

World Poultry Congress.

Although it was originally intimated that entries of live stock for the World Poultry Congress Exhibition would close on March 31st, entries are still being received at the Ministry of Agriculture, and as there is likely to be plenty of space in the livestock section they are being accepted. The national exhibit from India, including jungle fowl, Aseel, fighting game fowl and pheasants, is expected in this country in May, and the birds will be accommodated on an English farm until the Congress in July. News has also been received that the American livestock exhibit will consist of exhibition or standard birds and not production stock, and it is intended to make the exhibit the most representative display of American standard stock ever staged. The Italian national exhibit will be made specially interesting by the inclusion of specimens of Italian art. Mr. Stephen Gaselee has been appointed to represent the Foreign Office on the Congress general committee, in view of the importance attached by the Government to the international character of the gathering. —*The Times.*

Foxhound Rescued in Mid-Ocean.

Captain A. D. Turton, commander of a Clan liner carrying a number of valuable foxhounds from Liverpool to Bombay, turned his ship round in mid-ocean to save one of them that had fallen overboard.

" When the vessel was crossing the Bay of Biscay," writes a friend of Captain Turton's, " this particular foxhound was tied up on the after-deck. Later it was missed. It must have slipped its collar and jumped overboard.

" Half-an-hour elapsed before the loss was reported to the captain, but as soon as he learned of it he turned the ship round and steamed back a mile beyond the estimated distance travelled since the hound fell overboard. The dog was not sighted and the vessel turned round again and steadied on the southerly course. The dog was then sighted a short distance ahead. A boat was lowered and the animal was hauled aboard exhausted. After careful attention it completely recovered."—*The Times.*

Abstracts.

[**Sterility in the Large Domestic Animals (Females)**. Robin. *Rec. Méd. Vét.* October, 1929. Vol. 105. pp. 702.]

Sterility is one of the most widely-spread plagues of animal breeding. All kinds of views and theories have been put forward to explain its occurrence, but our knowledge regarding it is still very incomplete. At the International Veterinary Congress at the Hague in 1909 a Swiss delegate stated that in some parts of Switzerland it had been found impossible to carry on. Reliable statistics are not available, but the author states that the slow recovery of the herds of France from the depletions caused by the war is largely determined by two factors—sterility and mortality among young animals.

"We are, however," says the author, "not now at the stage, still not long passed when, on being shown a sterile cow or mare, one advised vaginal irrigations with alkaline solutions, or the veterinary surgeon believed he had done all that was in his power when he used an antiseptic pessary or recommended artificial insemination."

Honour is due to Hess and Zschokke of Switzerland, Albrechtsen of Denmark, to the American investigators, and to Roger, Ricaud and Tavernier for the systematic examination measures they have applied for the control of this plague.

The author describes briefly the processes of ovulation and fertilisation, and points out that the study of sterility must begin with the examination of these acts or functions.

It is useless to waste time over what he calls the ordinary changes and lesions which are encountered in the ovary from time to time.

Two points, however, deserve detailed consideration, of which the first is the persistence of the corpus luteum. A brief description of its production, of its persistence if fertilisation takes place and of its disappearance if fertilisation does not, is given. The corpus luteum is not merely a cicatrix of the wound left in the ovary when a follicle ruptures. It has been shown by Prenant and others that it is in reality a gland with an internal secretion. In the pregnant female it plays a part in the process of establishment of the ovum in the uterus. But in all probability it exercises an action antagonistic to other endocrine glands, and particularly the pituitary. It is an inhibitory organ which maintains sexual calm and suspends the contractility of the uterus. If it is destroyed abortion promptly takes place and œstrum reappears. It also exerts an action in non-pregnant females. While it is in existence the cells of the follicles cease to divide. If it is destroyed the animal comes in season before the proper time and an ovum is ejected from the ovary.

If the corpus luteum is not resorbed normally the animal fails to come into season, but occasionally the animal appears to come into season without, however, becoming pregnant if served, because the ovary remains quiescent and ova are not liberated. Persistence of the corpus luteum beyond the normal period in a non-pregnant animal may lead to uterine inertia with accumulation of secretions in that organ, producing possibly hydrometra or pyometra. Both of these are incompatible with impregnation.

It has to be admitted that we are almost completely in the dark regarding the reasons for the persistence of the corpus luteum with the consequent arrest of function of the genital tract. A variety of explanations have been offered, but demonstrable proof has not been furnished. Roger and Ricaud have shown that in herds heavily infected with Bang's bacillus the proportion of animals showing persistent corpus luteum is considerable.

Swiss authorities perhaps exaggerate when they attribute 90 per cent. of sterility to the presence of cysts in the ovaries. Two types of cyst are recognised, namely, those resulting from degeneration of corpora lutea, and the so-called follicular cysts. The latter, which may attain the size of a sparrow's egg, are considered to be the more important. The action exerted on the ovary by such cysts appears to be one of mechanical irritation, and their presence results in continued genital excitement, producing the condition known as nymphomania.

The connection between these cysts and sterility is a matter of doubt.

For the most part, Danish, German, and American investigators consider that infections of the uterus are largely responsible for sterility. It is affirmed that even in the absence of clinical evidence of endometritis, there are histological changes in the uterus of cows, which have cystic ovaries, which indicate the existence of inflammatory processes, and that these changes may precede the cystic alterations in the follicles. Bacteriological investigations not infrequently reveal the presence of the same organisms in the uterus, oviducts, and ovarian cysts. No very lucid or satisfactory explanation has been offered of the manner in which bacterial invasion of the ovary produces the cyst formations. It may, however, be stated that if these cysts are sufficient to disturb ovulation they follow an infection which spreads from the uterus or sometimes even from the vagina. Cases of sterility occur in which there is no recognisable defect of the ovary, and disease of the fallopian tubes is responsible in many instances. In human medicine such disease is said to be the cause of sterility in 50 per cent. of cases. Destruction of the layer of ciliated epithelium hinders the passage of the ovum down the tube, and inflammatory processes producing granulations or even thickening of the mucous membrane obstruct the passage. American investigators consider this condition an important cause of sterility, but the author is inclined to doubt whether it really has the importance assigned to it by them.

Statistics published by Richter show that more than 90 per cent. of sterile cows have already bred calves, and this indicates that diseases attendant upon pregnancy play an important part in producing sterility. The uterine secretions, as the result of alterations in the living membrane of the organ, may become destructive to the spermatozoa. There is a very general consensus of opinion that contagious abortion is largely to blame for sterility, but available statistics—which are very few in number—are not in agreement as to the proportion of cases of sterility that are due to contagious abortion. Rinjard has reported that about 20 to 25 per cent. of cows infected with contagious abortion become sterile, while Rogers and Ricaud have stated that in infected herds 70-75 per cent. of cases of sterility are due to contagious abortion.

In infected cows retention of the cleansing occurs very frequently, and manual removal is sometimes fraught with

difficulty. This retention favours the development of endometritis. Even when cleansing is prompt, however, the return of the uterus to the normal is retarded, and metritis occurs. Bang's bacillus is not directly responsible for these cases, but it is indirectly responsible in that it leaves the uterus liable to secondary infections. The author states that Bang's bacillus is not recoverable from the uterine discharges two months after abortion takes place; the bacillus cannot therefore be held responsible for persistent metritis.

According to Roger and Ricaud, 50 per cent. of cows, which have been proved to be infected with contagious abortion by the serum test, have never aborted, and have shown no symptoms of metritis. In several instances the occurrence of a series of cases of sterility was the first indication that contagious abortion had gained access to herds, in which no case of abortion was known to have occurred. It is not known exactly how contagious abortion produces this condition, but it has been observed that animals thus rendered sterile show lesions of the ovary consisting of one or more enlarged corpora lutea.

In passing, the author notes that sterility may result from infectious abortion in mares, but it is nothing like so frequent a sequel as in cows. Statistics from breeding establishments show that cases of sterility do not occur more frequently in areas infected with equine abortion than in areas free of that disease.

The significance of the so-called granular vaginitis as a cause of sterility is a matter upon which agreement has by no means been reached. Some Swiss authorities hold it responsible for up to 60 per cent. of cases. German and Italian authorities have held that the immense majority of cases attributed to granular vaginitis are in reality due to a superimposed infection with Bang's bacillus. The author is inclined to agree with a number of his own countrymen (Vagnard-Satre, Charbonnier, Salomé, Linon, Gétas) that granular vaginitis is an important cause of sterility.

In the majority of recent and acute cases of granular vaginitis the animals come into season regularly, but service fails to impregnate them. The author holds that the view that this is due to abnormal reactions of the vaginal secretions cannot be sustained. It is practically certain that the hypersensibility of the vulvo-vaginal mucous membrane, which is often increased by unsuitable treatment, produces at the moment of service a contraction of the passage, and the seminal fluid is expelled. There occur with comparative frequency cases in which there is a gradual invasion of the genital tract including the ovary, by a streptococcus (Hoecker) which is responsible for persistence of corpora lutea and, more rarely, cyst formation.

The author then reviews briefly the supposed causes of cases of sterility in which no defect of the genital apparatus can be discovered. Diet would appear to play an important part. Experiments carried out at Wisconsin between 1917 and 1920 showed that regularity of season and pregnancy depend to a large extent upon the supply of a correctly-balanced ration containing the necessary factors. The attention of the American investigators was concentrated particularly upon the lack of calcium, insufficiency of proteins, mineral salts and vitamins.

The author says that in France, where diets are generally quite satisfactory and are not composed of commercially-produced foodstuffs, this factor is of no importance. The author then proceeds to deal with the subject of sterility from the point of view of the practitioner who is called upon to determine the cause of the condition.

Early recognition of the condition of pregnancy is of great importance. It is pointed out that animals may appear to come into season with considerable regularity even when they are actually pregnant, and it is said that about 10 per cent. of cows sent to the slaughterhouses as barren are actually found to be in calf.

Rectal examination is a valuable means of determining whether an animal is pregnant. In the mare the gravid horn of the uterus can be recognised at the fourth week, and in the cow at the sixth week. In the mare, rectal examination is not necessary, because examination with a vaginal speculum reveals the presence of a layer of greyish-white, gummy mucus on the walls of the passage.

It must not be forgotten that some cows do not come in season again at the usual 15 to 20 days after parturition. The interval may be as long as two months, nor must sight be lost of the fact that ovulation and heat are not invariably coincident.

The author states that there are certain strains of mares in which ovulation takes place every other year only, in spite of apparently normal heats. Another point is that impregnation is not a mathematical certainty even when there is nothing to hinder it. There seems to be a certain incompatibility between certain spermatozoa and ova which is comparable to the existence of "blood groups," which may furnish an explanation of some of the failures to produce pregnancy. This appears to apply to human beings as well as to animals.

The author regrets that he cannot do more than indicate in a more or less general way the manner in which the practitioner can conveniently carry out an examination of the genital organs, as it is quite impossible to go completely into minute details.

In the case of the cow, clinical examination of the uterus and ovaries presents no great difficulty. As a rule the uterus can be felt by the hand introduced into the rectum as a firm, elastic cord about 3-4 centimetres in diameter and 10 to 15 centimetres in length, crossing the brim of the pelvis a little to the right of the middle line. The neck of the uterus can be identified as a thickening of this. Passing the hand forwards, the horns of the uterus can be examined in turn for the presence of liquid, tumours, etc.

In cases where the uterus is empty and in a healthy condition it is comparatively easy to palpate the ovaries. These are reached by following the fallopian tubes, which feel like cords about three millimetres in diameter, forwards from the tips of the uterine horns. If they cannot be reached in this way the neck of the womb is drawn backwards into the vagina by means of proper forceps, and rectal examination is repeated. The ovaries will now be found at the entrance to the pelvis. The presence of persistent corpora lutea can be detected by such examination. The corpora lutea occur as firm, round, non-fluctuating projections from the general ovarial substance. They are of firmer consistence than the ovary itself.

In mares the examination of the uterus and ovaries *per rectum* presents far greater difficulty. Fortunately, in the immense majority of cases it is not necessary to examine the ovaries in the mare because sterility is due to endo-

metritis. It is, however, useful to be able to manipulate the ovaries for the purpose of massaging them. To do so the arm is introduced into the rectum as far as possible and, passing the hand gradually across the abdominal wall, one feels the cord which forms the edge of the broad ligament. Following this upwards and forwards the ovary is found as a body about the size of a hen's egg almost sub-lumbar in position.

In the cow the cases of simple salpingitis, which are considered of so great importance in the United States, cannot be diagnosed by palpation. American authors advise insufflation of the uterus with an air pump until the pressure registers 160 mm. of mercury. If the pressure remains steady it is concluded that there is obstruction of the fallopian tubes. If, however, it gradually falls, as shown by the manometer attached to the apparatus, the fallopian tubes are pervious, allowing the air to escape into the peritoneum. The author does not give details of the technique because there is little likelihood of practitioners using it. He states, however, that it is possible that in certain circumstances the method may have some therapeutic value.

The non-appearance of heat in an animal is an indication of congenital atrophy of the ovary or possibly hermaphroditism.

In cases of cows which have already had calves, and which cease to come in season, examination of the ovaries should be carefully carried out. Very frequently persistent corpora lutea will be found, or possibly evidence of some other pathological condition. In very old cows there may be simple atrophy of the ovaries. If in spite of heat, which may be persistent, animals cannot be impregnated, and if at the same time there is deformity of the croup, with relaxation of the sacrosciatic ligaments, it will probably be found that the ovaries are in a cystic condition.

Disease of the genital organs other than the ovary is to be suspected when animals fail to conceive in spite of frequent service by bulls of proved worth. If a series of cases of sterility occcurs in a herd, the existence of contagious abortion or of contagious granular vaginitis should be suspected.

Dealing with treatment, the author passes over those conditions which are amenable to recognised surgical intervention.

In the absence of any recognisable abnormality of the genital tract, recourse may be had to procedures calculated to stimulate the ovarian functions.

A multitude of remedies have been recommended for the purpose of bringing an œstrum, but the majority of them are useless, and the use of some of them is not free from danger. Yohimbine has been greatly vaunted, either alone or in conjunction with veratrine or papaverine, but it is scarcely superior to any of the others. In some cases it does appear to have caused œstrum to appear, but it seldom re-establishes the œstrous cycle. Opotherapy is a far more rational procedure. Ovarian extracts and follicular extracts have been used for subcutaneous or intravenous injection; gland grafting has also been practised. Staëhli claims to have restored normal functions of the ovary followed by pregnancy in 46 out of 51 cows in which ovaries were engrafted. The author says "Whatever biological interest may attach to such results, their practical importance should not be exaggerated. It is very seldom that sterility is due to simple non-functioning of the ovary."

In the cases of granular vaginitis of recent origin the irritability of the mucous membrane may be lessened, and expulsive efforts reduced by washing out with tepid alkaline solutions or mucilaginous decoctions containing opium or belladonna. Cocaine ointment applied just before service also assists in preventing expulsion of the semen.

Little can be done in the chronic forms of the disease. The author holds that it has never been shown that the secretions of the vagina are ever acid and consequently inimical to spermatozoa. Irritating salves or solutions used for the purpose of destroying granulations are ejected. Bougies are found later in the bedding.

According to the Swiss authorities, cystic conditions of the ovary and persistent corpora lutea account for the great majority of cases of sterility. These conditions are dealt with by manipulation *via* the rectum. Some practice is required before skilful operations of this sort can be carried out. It is emphasised that while firm pressure is required to effect the rupture of the cysts or the enucleation of the corpora lutea, any brutal treatment is to be avoided. Pressure can be exerted between the fingers and thumb, or between the fingers and the palm of the hand. In some instances pressure of the ovary against the ilium is of great assistance. Slight damage is certain to be done to the mucous membrane of the rectum with consequent hæmorrhage. This is of no consequence. But a fatal termination to the operation may occur as a result of hæmorrhage from the ovarian vessels, and owners should be warned of this possibility. It can be avoided with practical certainty by maintaining pressure for a good five minutes after the cysts or corpora lutea have been expressed.

It sometimes happens that a corpus luteum is not completely removed at the first manipulation, but a repetition of the operation some eight hours later generally succeeds with surprising ease is removing the remainder. It is of course possible that all the cysts or corpora lutea are not got rid of at the first intervention, as evidenced by a failure to return to normal of the genital functions, and in such cases repeated manipulation is sometimes necessary before that is achieved.

In Anglo-Saxon countries it is generally held that treatment of the ovaries is not sufficient to restore conditions to the normal, and uterine treatment is carried out. The uterus is irrigated through a return-flow catheter. Great care must be used in inserting the catheter or serious injury may result. The passage through from the vagina to the uterus is tortuous, and its mucous membrane is thrown into folds. Attempts to use force when the passage of the instrument becomes obstructed may lead to perforation. When the catheter has been introduced the uterus is thoroughly flushed out with boiled water, normal saline or a tepid solution of sodium carbonate and sodium fluoride (strength not given—Abstr.). Then a solution of iodine up to 3 per cent. strength is injected, the amount used being about 400 c.c.

In mares irrigation of the uterus is easier than in cows because the os is not firmly closed when there is disease of the uterus. But no attempt must be made in mares to draw the os back into the vagina for insertion of the catheter. Bovines do not object to this procedure, but

mares resist it. In mares 0·5 per cent. collargol or methylene blue (recommended by Benesch of Vienna) may be used in place of iodine. Italian investigators have used biological products prepared in various ways from organisms isolated from the uterine exudate, and in France Tavernier claims interesting results from the use of polyvalent vaccines in cases of metritis. The author considers that whatever value vaccines and other biological preparations may have, it would be a serious error to omit ordinary surgical treatment.

A. L. S.

[**Morbid Histology in the Inspection of Meat and Meat Products.** Abelardo Gallego *Revista de Higiene y Sanidad Pecuarias.* Nov.-Dec., 1929.]

Morbid histology is much more applicable to meat inspection than to clinical work, and the meat inspector has infinite opportunity for study in this field.

It is no longer possible to say that histologic examination is impossible in an abattoir owing to the complicated technique and loss of time. Twenty minutes is ample time to form a diagnosis.

Pieces of the tissue not more than ·5 cm. in thickness are cut and immersed in 10 per cent. formalin, heating to 80° C. for a few minutes or bringing to the boiling point three times. Allow to cool and wash in running water, cut frozen sections, and stain by any appropriate simple method, dehydrate in alcohol and clear in xylol.

To examine tinned meats, cut thin slices and fix in 10 per cent. formalin. Transfer to a weak solution of gelatin in water, then pass them into a stronger solution and leave in the incubator at 37° C. When the block has cooled to the consistency of indiarubber, harden it in 10 per cent. formalin and cut frozen sections.

R. S. R.

[**Psittacosis.** Marcks (*Zeit. f. Medizinalbeamte,* January 15th, 1930, p. 54, ex *Brit. Med. Journ.*]

The author records an outbreak of seven cases of psittacosis in Berlin in the household of a professor who had just returned from Brazil with four parrots, three of which had died. In all the patients typhoid symptoms developed after a sudden onset of high fever; in one instance the incubation period was only three days. Pneumonia developed in all the patients at an early stage, but none had any cough or expectoration. In no instance was there any interhuman transmission of the disease, but all the patients had come in direct contact with the parrots. The disease ran a much milder course in the younger patients, aged 11 and 19 respectively, than in the others. In the two fatal cases the necropsy showed that double pneumonia was the cause of death. Marcks concludes that this outbreak shows that special precautions should be taken with regard to parrots which have just been brought into the country, especially from America. Unnecessary contact with parrots should be avoided, and the bodies of birds suffering from diarrhœa should be burnt as well as their cages. All parrots coming from America should be medically examined and kept in quarantine before they are put on the market.

Divisional Report.

North Wales Division, N.V.M.A.*

President's Address at Llandudno.

A meeting of this Division was held at the Station Hotel, Llandudno Junction, on Friday, February 21st. The newly-elected President, Mr. J. H. Wynne, occupied the chair, and the following members were present: Messrs. Booth, Broome, Cartwright, H. V. Hughes, R. Jones, W. O. Jones, Matthews, Dr. Montgomerie and Mr. Savage. Apologies for absence were received from Mr. Cane, Major Hobday, and Dr. Share-Jones.

Correspondence.—(1) It was agreed that the President should represent the Division at the Congress of the Royal Sanitary Institute at Margate.

(2) A letter was read from the Secretary of the Liverpool University Society asking for the co-operation of the members of the Division in assisting final year students to see practice during the vacations. The meeting viewed the matter with favour and the Secretary promised to communicate with any member who desired to take a student in his practice.

Mr. Wynne's Address.

Mr. Wynne then rose amid applause to deliver his Presidential Address, which was as follows:—

I am very grateful to you for having elected me your President for the year. It is usual for the newly-elected President to give a short address, and I must follow that custom.

It is over 30 years since I had the privilege of becoming a member of the veterinary profession and during that period there have been very many changes. At that time agriculture was in a very depressed state. To-day things are not much better, and as the general practitioner is so dependent upon agriculture any measures that are likely to improve this, the most important of all industries, should have the whole-hearted support of our profession. We have recently heard of the new United Empire Crusade; all I will say about that is that it has the appearance of being what is wanted.

The North Wales Division takes in six counties, and considering the long distances that some members have to travel to attend meetings, and the fact that all are single-handed surgeons, the attendances at our meetings show how faithful some of us are.

We possess one distinction that probably no other Division of the N.V.M.A. can boast—we are bi-linguists, who carry out a considerable part of our professional duties in our native language and, although in these days this qualification is not absolutely necessary, it is of considerable advantage in North Wales. We have a few members who have not yet mastered our language, but we are proud to be associated with them.

Conditions have greatly changed during this period. In the early days milk fever had a mortality of 70-80 per cent. and I can well remember how discouraging it was to a

* Received on 11th, March.

young beginner who was trying to work up a connection in a district where milk fever was very prevalent, to lose so many cases, or to have to tell the owner to slaughter the cow for human food—a common practice in those days. It was very depressing and unsatisfactory. Then came a godsend—both to the practitioner and the owner—*viz.*, Schmit's treatment by the injection of potassium iodide into the udder, and almost at one stroke the heavy mortality was reduced to one of only 7-5 per cent. Very soon chinosol, oxygen and filtered air replaced the iodide, and all of them were satisfactory, except that occasionally injection or inflation of the udder, however careful one may be, is liable to lead to trouble in rare instances. We are now in sight of an effective treatment for milk fever that will obviate the necessity of treating the udder, thanks to the work of Professor Greig, and those associated with him. This is only one instance of the wonderful strides that have been made during the last 20 or 30 years. This work on the blood salts is of outstanding merit and likely to lead to further discoveries.

We have now several Research Institutes, all of which are doing excellent work, and there is plenty of scope for them all. We still have Johne's disease, contagious abortion, sterility and a host of other diseases to conquer.

We desire gratefully to acknowledge the excellent work that one of our own members, Dr. R. F. Montgomerie, has done on liver fluke. This disease was causing enormous losses all over the British Isles, and now we have an effective method of preventing these losses.

Agriculture benefits immensely by these researches, and what is of benefit to the stockowners of this country is bound to reflect to the credit of the profession as a whole.

In those early days of the period under review, too, motor-cars commenced to make their appearance. Many of us soon gave them a trial and it was not very long before it was found that to the practitioners of medicine the motor car was a boon. The fast rate of travelling, and a cover to protect one from the weather—so different from what we had been used to—were distinct advantages, and to-day the life of the country practitioner, especially of those who have long distances and hilly districts to encounter, is very much pleasanter and, I may add, more remunerative than in pre-motor-car days.

This period has had two wars. The South African War did not make very much difference to the profession in the British Isles, as far as I can remember. But I know that our profession gave a very good account of itself, and that the services rendered were of very great value.

The Great War of 1914-18 will never be forgotten by those who helped to win it. In common with all others, our profession acted with fine courage and devotion to duty, the majority leaving their practices and appointments to go out to do their utmost, while the few who were left at home were doing equally good work by "keeping the pot boiling," to provide food and other necessaries for all concerned. Happily, this strife is over, for ever, we sincerely hope, but the effect of it will be felt during the rest of our lives in the form of increased taxation, and in other respects.

The war and the motor-car are responsible for the heavy loss that veterinary surgeons have suffered in the reduction of horse practice. To town practitioners this has been a heavy blow, and to a less extent country practitioners also suffer, but let us cheer up, the lot of the veterinary surgeon of to-day is a desirable one. It is a fine, healthy, open air life—and with the aid of motor-cars, telephones, and electrical appliances wonderful improvements have taken place.

With the proposed extension of the course for the M.R.C.V.S. diploma to five years we must all agree. It is necessary to advance and to keep abreast of human medicine. A few will deplore the extra expense that will be entailed, as agriculture is not in a rosy condition just now. No doubt it will be asked "Is the game worth the candle?" The answer to this must be in the affirmative; the better equipped our new graduates are the more likely they are to reap adequate remuneration. The future will require many men for the public services, and even those who intend to settle down in general practice will benefit by the extra year. Sir John McFadyean's proposal that students should obtain more practical knowledge during the vacations is a sound one. It is to be hoped that this will be acted upon, though it will take sometime before the majority of students can be placed, or be able to place themselves.

During the last 30 years the number of members on the R.C.V.S. Register has only increased by about 300, while the number who hold the Fellowship diploma has decreased by about 40. I think it would be desirable if more of our young men could be encouraged to take this Fellowship diploma.

The outlook for the veterinary profession is distinctly prosperous, provided the profession does not become overcrowded, which, judging by the past, is not likely to happen.

The Council of the Royal College of Veterinary Surgeons is doing excellent work on behalf of its members. The time that the Members of Council devote to their duties—at Committee and Council Meetings—must mean a great sacrifice on our behalf; and not only is time given freely, but, to those who live far away from London, the expenses of travelling and hotels must be considerable. All this they give ungrudgingly.

I think the time has arrived when all members of the Council of the R.C.V.S. should be paid their expenses. The annual Registration fee should allow of this being carried out, and I trust that it will be considered by the Council in the near future. Such a step would have the effect of placing those who reside in Scotland, Ireland, and other far-away places more on an equality with those who, living nearer to Red Lion Square, are more favourably placed. The principle is a sound one, and one cannot believe that there would be one member of the profession who would not readily agree to this proposition. The younger body, too, the N.V.M.A., is doing admirable work for the profession—and as soon as the finances of this body permit of it, the principle of paying the expenses of members of its Council might be considered. I thank you very much.

Mr. Matthews, in a brief speech, proposed a vote of thanks to the President for his address. Thirty years was a long period to look back upon and Mr. Wynne had reviewed the period very well. In listening to the address he had been reminded of the difficulties which he had encountered in his time and he agreed with the

President that the future of the profession was a prosperous one and that the present depression would pass over, as had happened in the past.

Dr. Montgomerie, in seconding the proposal, said he wished to thank the President for his interesting address. He considered it to be a model of what presidential addresses should be, for it was a good review of the past and it contained concrete suggestions for the future. He hoped the proposals brought up by Mr. Wynne would receive the attention which they deserved.

Sheep Scab.

The report of the Council on the methods advocated for dealing with sheep scab was next considered. After prolonged discussion the following recommendations were agreed upon—

1.—That, since it must be recognised that the nature of the supervision exercised at dipping time varies greatly with the individual supervisor, steps be taken to impress upon supervisors the importance of their duties, so that really careful dipping shall be carried out in every case.

2.—That Inspectors be urged to exercise great care when examining flocks which have been infected, to ensure that the sheep are completely and unmistakably cured before they are released.

3.—That farmers be educated to the importance of rounding up every sheep at dipping time.

4.—That, since there is ample evidence that the tail, and occasionally the ears, of sheep harbour the acarus of scab, farmers be advised to inspect these parts at shearing time with a view to detecting old-standing cases of the disease.

5.—That Veterinary Inspectors be urged to issue special instructions when defining treatment, that affected tails be clipped and scrubbed with soap and water containing an alkali before applying an antiparasitic dressing to the part.

6.—That County Agricultural Committees in areas where sheep scab is prevalent be recommended:—

(*a*) To appoint a Sheep Scab Eradication Sub-Committee with power to co-opt one or more Veterinary Officers.

(*b*) To appoint Patrol Shepherds with police powers of entry and inspection.

(*c*) To erect a larger number of modern, suitably-placed dipping conveniences so as to cope more successfully with a large number of sheep at one time.

(*d*) To advise the owners of clean flocks, when introducing sheep from another area, to have the sheep double-dipped under police supervision before allowing them to come into contact with the sheep of their original flocks.

Hon. Treasurership.—The Secretary then read a letter from Mr. Llewelyn Jones, resigning from his position as Honorary Treasurer. It was agreed that Mr. Jones' resignation be accepted with regret and that the thanks of the Society be conveyed to him for his services during the year. Mr. Cartwright was unanimously elected to the Treasurership in Mr. Jones' stead.

Overseas Members.—The question of membership of those members who had gone abroad was next considered and, after a discussion, it was agreed that the Secretary should inform the gentlemen concerned that they would be welcomed as visitors at any meetings of the Division which they might be able to attend.

Dinner.—As a result of the success of last year's dinner, it was agreed to hold another again this year, the venue being Carnarvon. The President and Secretary were requested to make arrangements for the function.

During the afternoon the members were entertained to tea at the hotel by the President and the thanks of the members were conveyed to him by the Secretary.

A collection in aid of the Victoria Veterinary Benevolent Fund was taken during the meeting.

H. V. Hughes, *Hon. Secretary.*

From The Veterinarian,

January, 1830.

The Symptoms and Cure of Navicular Disease in the Feet of Horses.

By Mr. James Turner, Veterinary Surgeon, Regent Street, London.

(Read at the Veterinary Medical Society, December 4th, 1829).

(*Continued from page* 342.)

I conceive that the rigidity of the posterior parts of the foot (the navicular joint not having suffered any injury) conveys to the animal the sensation, not of pain, but merely slight restraint or compression, which is attended with a corresponding want of confidence, that induces him to give an undue bias to the weight towards the toe or front of his foot; the laminæ of the fore part of the coffin bone sustaining the burden, while the navicular bone and heels of the coffin economically receive only so much of the superincumbent weight as the degenerated harsh spring may be capable of disposing of; and therefore a ***condition of the foot is produced which approaches to disease.*** Thus, I think, may be solved the greatest of all mysteries regarding excellence in the movement of this incomparably useful animal, *viz.*, that a valuable horse, highly gifted with action, and in the prime of life and spirits, suddenly ceases to convey to the rider that indescribable pleasant sensation which had always before distinguished him from common horses; ***his action becomes limited in his slow paces*** without any apparent cause; and yet his mode of going might defy the competent veterinarian to pronounce him lame, although brought cool from the stable onto the pavement; and the owner is the more perplexed, in proportion as he himself attempts to ascertain the cause. If the horse happens to be a fast trotter, he tries him for a spurt; "Oh!" says he, "he never performed his mile in less time in his life."

If, instead of a trotting horse, it be an accomplished hunter, he returns from the chase, and exclaims in ecstasy, "We have gone the best pace without a check, and he has carried me brilliantly!" when, perhaps, on the preceding day, he had ridden him five or six miles, at a walk or *slow* trot, and returned thoroughly disgusted with him; for, instead of performing with his wonted grace and elegance in a firm, flat step, not only regardless of the weight of his rider above, but equally as independent of the stones below, he shuffled, broke frequently from the walk into a jog, dropped occasionally, now and then dug his toe or pegged it against a stone, a failing before unknown with this faultless animal. Under these inauspicious circumstances, the style of his slow trot, to a bystander, would appear only on a level with that of a sound horse possessing merely the ordinary degree of action, so that the owner would be the only person aware, from his knowledge of the previous merits of this animal, that

he had lost anything. Now, you will naturally ask, What has he lost? I answer, *the equilibrium or natural adjustment of the superincumbent weight, the laminæ in front of the coffin bone sustaining an undue proportion,* whilst the function of the laminated structure of the bars and heels is limited, or partially suspended. Hundreds of horses, and even young ones, are annually sold in London as sound, which have suffered this deterioration, in defiance of the most scrupulous examinations as to soundness.

Now you will contend that, in the case I have proposed, of the horse being capable of trotting at the rate of 20 miles an hour, or being a weight-carrier up to the fleetest hounds, he must possess elasticity; granted, but the quetion is, not what he now has, but the degree of elasticity he once possessed; and we can judge of perfection only by comparison.

Even a confirmed groggy horse, incurably lame, might be selected to accomplish one or other of the feats I have just mentioned; though I must acknowledge it would put in requisition the rare remains of one of Nature's masterpieces; still, such a description of horse is to be found.

It therefore appears that an incipient defect of this kind may, under certain circumstances, alter the animal's action without occasioning lameness; and that a horse, either of breeding or of good mettle, when called into quick movement, has his energies so far excited as to be totally regardless of the rigidity of this spring; that is, supposing the navicular joint to be unimpaired.

(*To be continued.*)

Agricultural Research Scholarships.

1. The Ministry of Agriculture and Fisheries awards annually a number of research scholarships in agricultural (including veterinary) science. The scholarships are of the value of £200 per annum and are (subject as mentioned below) tenable for three years.

2. Scholarships are open to Graduates with Honours in Science (or equivalent qualifications) of a British University. Evidence of high proficiency in one of the following subjects is necessary:—Chemistry, Botany, Zoology, Physiology, Economics or Veterinary Science.

3. All applicants for Scholarships must be nominated by a Professor or Lecturer of a University or College.

4. Nominations must be received not later than June 15th in each year and must be made on the prescribed form. Nominations will be considered in the case of candidates who are about to sit for an honours examination or who at the date of the nomination have not been acquainted with the result of an honours examination for which they have sat. Such nominations will be regarded as provisional only and a decision will not be made in such cases until the result of the examination is known.

5. A scholar must engage in research work under such supervision as the Ministry may prescribe, and at such institution or institutions as are approved by the Ministry. The programme of research work in which it is desired to engage must receive the approval of the Ministry.

6. A scholar must not hold any salaried post other than his scholarship and he must not receive any payment other than from the Ministry for work undertaken under the terms of his scholarship.

7. The object of the scholarships is to train research workers and thus to advance agricultural science, but no conditions are imposed as to the nature of the work a scholar shall take up after the termination of his scholarship, and no guarantee of employment at the termination of the scholarship can be given by the Ministry. It is, however, usual for Agricultural Research Institutes to fill any vacancies occurring in their junior staff from among Agricultural Research Scholars.

8. Scholarships commence from October 1st in the year of the award or as soon thereafter as arrangements can be made for the scholar to commence work.

9. Payment of the amount of the scholarship will be made in instalments of £50, due at the close of each quarter. No laboratory charges or compulsory fees will fall to be paid by a scholar.

10. The scholar may be required to spend some part of the three years at an approved foreign Laboratory or University. His travelling expenses to and from the Laboratory or University will be paid by the Ministry, and an extra allowance for maintenance will be made where necessary.

11. A scholar will be entitled to such vacations as may be accorded to him by the authority under whose supervision he is placed, but the aggregate absence in any one year must not exceed two months.

12. Quarterly reports on the progress and diligence of the scholar are required from the authority under whose supervision the scholar is placed by the Ministry. Tenure of the scholarship is subject to such reports being satisfactory.

Ministry of Agriculture and Fisheries.

Horse Society Meetings.

The National Horse Association.

At a Council meeting of the National Horse Association held on Wednesday, April 2nd, the Chairman of the Publicity Committee reported that 20,000 stamps with the head of a Clydesdale horse has been added to the series of publicity stamps being distributed, and breeders of that type of horse were invited to utilise these stamps on their correspondence. Thirteen stamps of different designs were now being issued, while a publicity bookmarker was also now on issue.

The booklet on comparative costs of Horse *versus* Motor traction would have to be reprinted to satisfy the constant demand, while he had pleasure in announcing that since January 1st the press had kindly given 157 announcements of the Association's activities.

Forty-two silver medals would be offered in the Children's Riding Classes at affiliated shows, while six shows had already been offered a silver medal in the shoeing competitions for the best-fitted shoe.

It was reported that the text of the Roads Traffic Bill had received the active attention of the Committee, and that action had been taken as regards rulings which might affect horse owners. A general conference of horse societies had also been held, when the existing privileges now enjoyed by horse users on the road were discussed, especially in regard to their inclusion, duly amended, in the proposed Highway Code to be attached to the Bill.

Other bills before Parliament which might affect horse owners had been dealt with, and amendment in the wording successfully introduced in several cases.

A general discussion took place as regards the Exportation of Horses Bill, and the Council eventually adopted the following resolution:—

"That the Council of the National Horse Association of Great Britain approve of the sentiments expressed in the Exportation of Horses Bill, but realise that certain amendments are absolutely necessary in order to safeguard the interests of breeders and owners in connection with the export of horses and ponies other than for slaughter."

A special sub-committee was appointed to deal with the various cases of gallantry in saving horses from death, and their recommendations would be reported in due course.

It was reported that 5,000 copies of the 2nd Report of the Slippery Roads Committee had been issued.

Sir Archibald Weigall stated that he considered that now the Association had achieved such successful results as was witnessed by that report to be adopted that afternoon at the General Meeting, an effort should be made to secure new supporters. As the incoming President, he hoped to be allowed to undertake the first general appeal for support from individual supporters. Up to the present the Association had been practically entirely supported by societies interested in the horse, but he now thought the time had

arrived when those interested in the horse might be specially invited to give the Association their support as members. This was agreed to.

Report of the Annual General Meeting of Members.

The President took the Chair at the Annual General Meeting of Members, and submitted the Report and Balance Sheet, expressing his gratification at the amount of successful work that had been undertaken. The efforts of the Publicity Committee to encourage the use of the horse were proving most successful; the Slippery Roads Committee had undertaken long tours in all parts of the country, and had issued a second report, while the offer of medals for gallantry in saving the life of horses from death had proved most popular. The case of the horse-owner had been most successfully put forward by Mr. Nigel C. Colman in the House of Parliament, and a great deal of work had been undertaken in connection with Bills which affected the horse interests.

Following the election of new members of Council, and the adoption of the report and balance sheet, Major-General Geoffrey H. A. White suggested that the objects of the Association should be definitely defined as :—

To further the welfare of the horse, and the interests of horse owners and breeders.

This was agreed to.

Sir Walter Gilbey, Bart., referred to the attacks on the horse, which asked that horses should be debarred from the streets. Sir Walter hoped that the press would assist the Association in proving what was an undoubted fact, that the horse was an essential factor in commercial transport, and that any restriction would undoubtedly ruin hundreds of small traders, to whom the horse is the only forms of transport possible.

President.—Lieut.-Colonel Sir Archibald Weigall, K.C.M.G., was then elected President for the year, with Major-General Geoffrey H. A. White as President-elect.

A most cordial vote of thanks to Mr. Cecil G. Argles (the retiring President) and to Mr. R. A. Brown (Secretary), for their whole-hearted activities and work during the past year, concluded the business of the Annual General Meeting.

Shire Horse Society.

At a meeting of the Council of the Shire Horse Society held on April 1st, in accordance with elections made by the Members at the Annual General Meeting, at the Show, Mr. David Davies was formally installed as President of the Society, and Mr. N. W. Smith Carington, M.P., as President-elect, *i.e.*, President in 1931.

Sir Walter Gilbey, reporting for the Horse Show Committee, said that from the Show point of view the Committee had every reason to be highly satisfied with the Fifty-first Show in February last. Every cog in the wheels of organisation worked smoothly, while as an exhibition of a particular breed of live stock it would be difficult to surpass. With the reducing number of entries only the best found their way to the London Show, which is now regarded as the "acid test" of an animal. Nowadays almost every exhibit was worthy of recognition by the Judges, and, indeed, very few were passed over. Of the 175 horses examined by the veterinary surgeons, 167 were passed sound, six were rejected for scheduled diseases, and the remaining two for lameness. The increased amount of prize money awarded and the continued advance in the cost of holding the Show would involve the Society in expenditure amounting to approximately £2,500 as against £2,300 last year. The Council, however, had in mind the precarious state of agriculture and felt justified in their present policy of extending the maximum possible encouragement to breeders during the present depression. It was hoped that conditions would shortly improve and, if those hopes materialised, it would then be possible to effect economies without inflicting hardships on breeders or exhibitors.

In Parliament.

In the House of Commons recently, the following questions and answers were recorded :—

Chemical Warfare (Experiments on Animals).

Mr. Freeman asked the Secretary of State for War whether there are other laboratories in addition to Porton where experiments on living animals are conducted; and, if so, would he give the number and kind of animals for each place that have been used in each of the last ten years, together with the numbers that have been killed?

Mr. Shaw: The only laboratory other than that at the experimental station, Porton, where experiments on living animals are conducted in connection with chemical warfare is the Physiological Laboratory, Cambridge. The following table shows the number and kind of animals used for such experiments during the years 1927-30. I regret that records prior to 1927 are not available :—

The numbers and kinds of animals used and killed in connection with chemical warfare experiments at the Physiological Laboratory, Cambridge, during the years 1927-30 are as follows :—

Year.	Animals.	Number used.	Number killed.
1927	Rats	33	—
1928	Rabbits	118	85
	Rats	1	—
1929	Rabbits	150	117
	Cats	67	67
	Pigeons	16	2
1930	Rabbits	6	6
	Cats	13	13

Horses (Export).

Mr. D. G. Somerville asked the Minister of Agriculture the number of horses which have been exported from this country during the last 12 months; the ports from which they have been exported; the uses for which they have been intended; and the number of refusals to export which have been recorded by his inspectors.

Mr. N. Buxton: During the 12 months ended February 28th, 1930, the latest period of 12 months for which figures are available, 9,965 horses have been exported from Great Britain to the Continent. The ports from which they were shipped are Folkestone, Goole, Harwich, Hull, Leith, London and Southampton. According to information furnished to the Ministry's inspectors at the time of shipment, 4,719 of these were intended for immediate slaughter on arrival abroad. The remainder include horses exported for use as army remounts, hunters, polo ponies and for ordinary working purposes. During the same period, 1,564 horses presented for shipment were rejected by the Ministry's inspectors.

Sir A. Sinclair asked the Minister of Agriculture to what extent the recommendations of the Departmental Committee on the export of horses to the Continent, which reported in 1925, have been carried out.

Mr. N. Buxton: The following statement shows the extent to which the recommendations of the Departmental Committee on the Export of Horses to the Continent have been carried out :—

Recommendations.

1. The attention of port inspectors should again be called to their powers to slaughter rejected horses.

2. The time has now arrived when the Ministry should insist on its full requirements as regards the fittings of vessels and that exemption should be for a definite period, and that the question of renewal should depend on the record of casualties, and on the number of vessels engaged in the traffic which fully comply with the Order of 1921.

3. Opportunity should be taken by Order of the Minister of making it an offence to carry horses on a vessel when there are reasonable grounds for supposing that rough weather will be encountered on the passage.

4. Local authorities at ports should be required to provide

a suitable place at which rejected horses could be slaughtered.

5. Efforts should again be made to get the Belgian and Dutch Governments to amend their regulations with respect to the importation of horse carcasses.

6. Inquiries should be instigated by the Ministry into the trade in the export of horse flesh (dead), with particular reference to chilling of flesh and improvement of transport facilities.

7. Port inspectors should be under the direct control of the chief inspector.

Action Taken.

1. This has been done. The standing instructions of the Ministry to its inspectors also deal with the point

2. This is being carried out where practicable when exemptions of particular vessels come under review. Only small variations from standard are allowed and some of the exempted vessels have already been withdrawn from the traffic. During the last few years many vessels have been built for the Continental traffic alone, the fittings of which comply in their entirety with the standard regulations.

3. This has been done.

4. The committee acknowledge in their Report that most of the horses rejected on examination at the ports are so rejected on account of the high standard of fitness required for all exported horses and not because they are in such a physical condition as to necessitate slaughter. During the five years 1925-29, inclusive, out of 52,857 horses presented for examination, 7,800 were rejected, but none was ordered to be slaughtered by the veterinary inspector as being unfit to be kept alive. It is considered unreasonable, therefore, to require local authorities at ports of shipment to provide special abattoirs for the purpose in view.

5. Efforts have already been made, without success, to secure amendment of the Belgian and Dutch regulations in respect of the importation of horse carcasses. It is considered that no useful purpose would be served by renewing these representations in present circumstances.

6. The Ministry has used every effort to persuade shippers and shipping companies to improve the conditions under which the carcass trade is carried on, but it has no statutory control over the trade.

7. This has been carried out.

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Foot-and-Mouth Disease, Scotland.

On April 7th, Mr. Day asked the Minister of Agriculture the number of actions that have been brought under the Diseases of Animals Act, 1927, for failure to report outbreaks of foot-and-mouth disease in Scotland; and whether in any of these actions the maximum penalty has been imposed.

The Minister of Agriculture (Mr. Noel Buxton): Only one action for failing to report with all practicable speed an outbreak of foot-and-mouth disease has been brought in Scotland since the passing of the Diseases of Animals Act, 1927. The maximum penalty of £50 was not imposed, the owner having been fined £5 with the alternative of 20 days' imprisonment.

. . . . . .

Tuberculosis.

Mr. Rinley asked the Minister of Health whether there are any local authorities whose tuberculosis figures show little or no decline during the past ten years; and whether he proposes to take any action in the matter?

Mr. Greenwood: There are a few areas in England and Wales in which there has been little or no decline in the death rate from tuberculosis during the past ten years. The factors which may bear upon this matter are receiving special study in my Department.

Mr. Smithers: Has the Right Hon. Gentleman any information, and, if not, will he try to get information, as to the extent that these figures have not declined owing to tuberculous milk?

Mr. Greenwood: That is a matter which is being investigated now.

Mr. Smithers: Will the Right Hon. Gentleman make special inquiries on the subject?

Warble Fly Eradication.

The Ministry of Agriculture has issued a notice giving details of the scheme which has been worked out by the Leathersellers' Company for waging war on the warble fly, in the course of which it is stated:—

"It is believed that by carefully-planned operations against it, it can be eradicated from this and most other countries.

"Experiments have been going on for many years to discover the most effective means of dealing with this pest, which in the fly stage worries the cattle by chasing them for the purpose of laying eggs upon them, causing thereby loss of milk in cows and loss of condition in all kinds of cattle. That is a mere preliminary to other troubles—loss of leather and meat—which come at a later stage. The method of treatment recommended, as a result of these experiments, is to destroy the mature larvæ before they leave the backs of the animals. The very interesting and useful work of the Departmental Committee which reported in 1926, and, later of the Agricultural Education Sub-Committee of the Worcestershire County Council, shows the best way to go to work. First, a dressing is mixed of 1 lb. of "Derris" powder—care must be taken to see that the "Derris" powder is a sound one, approved for the purpose by the Leathersellers' Company Committee—¼ lb. of soft soap, and one gallon of water. This dressing will be sufficient for 120 cattle with average warble infestation. The ¼ lb. of soft soap is dissolved first in one quart of boiling water and allowed to cool, after which it is poured over the 1 lb. of "Derris" powder and the mixture well stirred, the gallon of water being afterwards added. Fresh material should be prepared and used at each dressing. The dressing is applied by rubbing off the scab from each warble hole and applying the liquid from a saturated cloth. It is claimed that, with care, 100 per cent. of the warbles will be killed by this means. Other and alternative dressings, such as nicotine, sulphate and lime, and iodoform ointment, are discussed in the Ministry's Leaflet on the Warble Fly, No. 21.

"It is recommended that at least four dressings should be made, the first about now and the others at intervals of a month, which will bring the time to the end of June. Farmers will appreciate the point that it is useless to think of entirely eradicating the pest unless all concerned in a district carry out the scheme at the same time. What applies to a district will apply, in time and turn, to the whole country, so that it is really requisite for all farmers to take a hand now, this year, in this warble eradication. It is not a costly business, nor is it very troublesome; that it is worth doing the Worcestershire pioneers have proved. With them, the average cost of the four dressings worked out at about a penny a head of cattle. On the other hand, the loss to farmers and others through warbles in this country is estimated at over a million pounds sterling per annum. Fuller particulars of the scheme can be got from any of the County Agricultural Organisers or from the Leathersellers' Company."

For failing to notify tuberculosis in three cows on his farm, George Young, a farm manager, of Haughton, Northumberland, was fined £50 at Darlington on Monday.

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William Dixon, 67, and George Norrie, 57, who have died at Jarrow from parrot disease, make four deaths in the recent outbreak caused by Brazilian birds brought to the Tyne in a ship.

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Mr. Rogan, supervising veterinary inspector of the Irish Free State, is in Holland studying the working of the Dutch laws on the inspection of meat, in view of plans for the establishment of a general meat inspection in Ireland.

Notes and News.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

April 25th.—Meeting of the Royal Counties Division, N.V.M.A., at Swindon.

April 28th.—Meeting of the Editorial Committee, N.V.M.A., 4.30 p.m., at 2 Verulam Buildings, Gray's Inn, W.C.1.

May 1st.—Meeting of the Central Division, N.V.M.A., at Camden Town.

May 8th.—Last day for receipt of nominations to Council, R.C.V.S.

May 22nd.—R.C.V.S. Voting Papers and Annual Report issued.

May 29th.—R.C.V.S. Voting Papers due to be returned.

June 5th.—**R.C.V.S. Annual General Meeting, Royal College of Surgeons, Dublin.** Followed by Annual General Meeting of the Victoria Veterinary Benevolent Fund. R.C.V.S. Annual Dinner.

June 13th.—D.V.S.M. Written Examinations.

June 16th.—D.V.S.M. Oral Examination commences.

July 2nd.—R.C.V.S. Quarterly Meetings.

July 3rd.—R.C.V.S. Quarterly Meetings.

July 4th.—R.C.V.S. Quarterly Meetings.

July 7th.—R.C.V.S. Membership Examination commences.

AUGUST 4th to 9th.—11th INTERNATIONAL VETERINARY CONGRESS, CENTRAL HALL, WESTMINSTER.

R.C.V.S. Obituary.

Brcwn, G. G., 36 Academy Street, Inverness. Graduated London, December 16th, 1904. Died April 5th, 1930. Age, 49 years.

"Many in Inverness and district will regret to learn of the death of Mr. George Griffith Brown, M.R.C.V.S.," says the *Inverness Courier*. "He had been in ill-health for some time. He was a son of Mr. George Frellerick Brown, Margate, who was at one time Mayor of that town. He graduated as veterinary surgeon in London, and came to Inverness to fill the appointment of assistant to Major William Logan, O.B.E., veterinary surgeon, with whom, some years later, he went into partnership. Mr. Brown, who was married to a daughter of the late Mr. T. D. Campbell, was well-known throughout the north, and was not only held in high esteem in the town of Inverness, but throughout the Highlands. The sympathy of the community is extended to his relatives."

Army Veterinary Service.

Movements of Officers.

Majors C. H. S. Townsend, O.B.E., M.C., E. Wallace, and G. Barnett, M.C., are at present in this country on leave.

Major B. A. Jarvis has been posted from Aldershot to Catterick for duty.

Major C. K. Calder has been posted from Catterick to the Equitation School, Weedon, for duty as Instructor.

Sheep Scab in the Outer Islands.

"The sheep-scab menace has developed to such an extent in the county, particularly in the Outer Islands, that Lord Lovatt, the convener of the county authority, has been in consultation with Government officials in London and the Department of Agriculture in Edinburgh, with a view to financial assistance being obtained to establish dippers in various parts of the affected areas," says the Inverness Correspondent of the *Daily Express*.

"I understand that the Department of Agriculture are prepared to help the county council in stamping out the disease, and that twenty-five dippers are to be provided.

"Lord Lovat is extremely desirous that the Executive Committee of Local Authority, who are responsible to the county authority, should exercise more supervision in systematic dipping, and that prosecutions be instituted in cases where the regulations are ignored."

Edgar Golding Prize.

Miss Phyllis Edmunds, a student of Liverpool University School of Veterinary Science, has been awarded the Edgar Golding Prize in veterinary anatomy, which was endowed in memory of the late Lieut. Edgar Golding.

Miss Edmunds is the second woman to gain the award, the other being Miss Ida Roberts (1925).

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

A Porcine Problem.

To the Editor of The Veterinary Record.

Sir,—This problem, propounded on page 330 in your last issue, may be answered in many ways:—

1. The feeding mentioned is not right for a pregnant sow and is likely to produce progeny lacking in vitality. The stuff called "toppings" may vary widely from almost wholly husk to a good floury sample, and even if it was very floury it would not be a good sole feed. She should have had some barley meal with the "toppings" and during the later weeks of pregnancy a little grain, peas, beans or oats. No mention is made of exercise during pregnancy, a very important matter.

2. Death of a fœtus may occur from suffocation due to slow rupture and removal of the fœtal envelopes. These, where a pig is born in them, should be ruptured by hand immediately.

3. Too close relationship in breeding may be a cause of fœtal death.

4. Mating with a boar too old.

5. Too fat a condition during pregnancy (not likely in this case).

6. Mouldy or decomposed food.

7. Was the wash from the house mixed with the "toppings" and heated before use?

8. Bad breeding capacity of the sows (not likely in all three cases).

Yours truly,

Bolton. G. Mayall, M.R.C.V.S.

The Editor acknowledges the receipt of the following:—

Report of a meeting of the Lancashire Division, N.V.M.A., from Mr. J. Spruell, Hon. Secretary.

Communications from Professor S. H. Gaiger (Liverpool), Mr. E. V. Kelly (Kells, Co. Meath), and Captain A. W. Noel Pillers (Liverpool).